

LAPTOP COMPUTER CASE**BACKGROUND OF THE INVENTION****Related Applications:**

[0001] This application claims the priority of United States provisional patent application Serial Number 60/458,388 filed 03/31/03.

1. Field of Invention

[0002] The present invention relates generally to the field of laptop computer case and more particularly to a laptop computer case adaptable to comfortably and safely cradle an operating laptop computer.

2. Background Information

[0003] Some laptop computer users transport their laptop computer in a protective case or bag. The computer must be removed from the protective case or bag when used, leaving the laptop computer vulnerable to shock or impact damage. The protective cases or bags are not suitable for effective support of an operating laptop computer held in the lap of the user.

[0004] Laptop computers may be difficult to use when supported directly on a lap of a user. A laptop computer user's arms may tend to tire over prolonged periods of use of a lap held laptop computer without wrist support. The angle of the user's lap may make the keyboard of a laptop computer held in the user's lap slope away from the user requiring the

user to adopt an uncomfortable orientation of their hands in order to access the keyboard. The bottom surface of the laptop computer may not frictionally engage the users lap making the laptop computer slide around in the users lap.

[0005] Many users try to reduce these difficulties by placing a pillow on their lap and the laptop computer on the pillow. The user may orientate the pillow to provide wrist support and support the laptop computer in an ergonomic position. The soft structure of the pillow will gradually yield precluding effective user wrist support and support of the laptop computer in an ergonomic position. The pillow also tends to insulate the laptop computer hampering the heat dissipation mechanism of the laptop computer which may result in computer damage.

[0006] What is needed is a laptop computer case that is adaptable to comfortably cradle an operating laptop computer on the user's lap without removing the laptop computer from the case. The case should place the operating laptop computer at an ergonomic inclination suitable for comfortable use by the user while providing a padded user wrist support while providing accommodations for laptop computer heat dissipation.

SUMMARY OF THE INVENTION

[0007] A laptop computer case according to the present disclosure is adaptable to comfortably cradle an operating laptop computer on the user's lap without removing the laptop computer from the case. The case places the operating laptop computer at an ergonomic inclination suitable for comfortable use by the user while providing a padded user wrist support and one or more computer accessory access doors while also providing accommodations for laptop computer heat dissipation.

[0008] The laptop computer case includes a tray having a plurality of engagement supports and a back edge. The engagement stops are adjustable relative to the tray to accommodate different computers. The laptop computer case also includes a lid connected to a hinge spacer at the back edge by a hinge and the hinge spacer is connected to the tray at the back edge by another hinge. The lid further includes a pad to engage the computer when the computer case is closed to provide shock resistance. When the computer case of the present disclosure is open as described, the pad insulates a user lap or other surface from heat generated by an operating laptop, and the pad also frictionally engages a users lap to provide a secure cradle for the operating laptop computer.

[0009] In another embodiment of the present disclosure, the laptop computer case may include a retractable carrying strap that serves as a case carrying handle in the fully retracted position. In another embodiment of the present disclosure, the laptop computer case may include an illumination device. In another embodiment of the present disclosure, the laptop computer case may include a retractable mouse pad. In still another embodiment of the present disclosure, the laptop

computer case may include retractable privacy and glare reducing side screens.

[0010] These and other features and advantages of this invention will become further apparent from the detailed description and accompanying figures that follow. In the figures and description, numerals indicate the various features of the invention, like numerals referring to like features throughout both the drawings and the description.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1A is a perspective view of a laptop computer case in a closed position according to the present disclosure.

Fig. 1B is a perspective view of the case of Fig. 1A in an open position.

Fig. 2 is a perspective view of the case of Fig. 1A in the open position cradling a laptop computer.

Fig. 3 is a section cut view of the case of Fig. 1B.

Fig. 4 is a perspective view of a laptop computer case in the open position according to another embodiment of the present disclosure.

Fig. 5 is a top view of the case of Fig. 1B in a closed position.

Fig. 6 is a top view of a laptop computer case in a closed position according to another embodiment of the present disclosure.

DETAILED DESCRIPTION

[0011] Referring now to Fig.'s 1A and 1B, in a currently preferred embodiment of the present disclosure, case 10 includes lid 14 attached by hinge 48 to spacer 54 and spacer 54 attached by hinge 46 to tray 12. Hinge 46 may be located on side 24 of tray 12 at any suitable location. Hinge 48 may be located on side 32 of lid 14 at any suitable location. Case 10 is in closed position 38 when spacer 54 abuts side 24 of tray 12, and when edge 22B of side 22 of tray 12, abuts edge 30B of side 30 of lid 14. In closed position 38 case 10 can cradle and enclose a laptop computer and provide shock resistance.

[0012] Case 10 is repositioned from closed position 38 to open position 116 when lid 14 and spacer 54 are pivoted, relative to tray 12, about hinges 48 and hinge 46, respectively, until lid 14 is located under tray 12 as shown in Fig 1B. In open position 116 edge 22T of side 22 of lid 14 abuts edge 30T of side 30 of tray 12. A user can reposition case 10 from position 38 to position 116 without removing a cradled laptop computer. The user can operate the laptop computer without removing it from case 10 when case 10 is in position 116.

[0013] In position 116, the connection of tray 12 to lid 14 by hinges 46 and 48 separated by spacer 54 ergonomically inclines tray 12 at angle 136 relative to top surface 14T of lid 14. When in position 116, side 30 of tray 12 is at a lower elevation relative to the user than side 24 thus creating an ergonomic incline. When tray 12 is at angle 136 relative to lid 14 an operating laptop computer cradled by case 10 is placed in a comfortable position for access by a

user. Angle 136 may vary with the orientation of lid 14 relative to tray 12. The relative orientation of lid 14 and tray 12 may be controlled by engagement elements located along edges 22T and 30T of lid 14 and tray 12 respectively. Angle 136 may also be changed by changing the location of hinge 46 on side 24, the location of hinge 48 on to side 32 and/or height 52 of spacer 54.

[0014] Space 94 is formed when case 10 is in position 116. Space 94 provides air access between tray 12 and lid 14. Air access may aid heat dissipation from space 94. Air access in space 94 changes with variances in angle 136. Changes in angle 136 directly affect air access and may increase heat dissipation from between tray 12 and lid 14.

[0015] Pads 70, 72, 74 and 76 engage and support a laptop computer within case 10. Pads 70, 72, 74 and 76 are located between the legs, feet or support structure of the laptop computer and tray 12 in any suitable location relative to tray 12 and laptop computer. Pads 70, 72, 74 and 76 provide shock absorption, support to the laptop computer and allow air access in space 82 between tray 12 and laptop computer 118 to aid heat dissipation as shown in Fig. 3. Pads 70, 72, 74 and 76 maybe any suitable shape. Pads 70, 72, 74 and 76 may removably engage tray 12 by any suitable means of engagement. Pads 70, 72, 74 and 76 may be laterally relocated, relative to tray 12 by means 130 attached at location 130". Means 130 may include adhesive or slotted attachment or hook and loop attachment or any suitable means of lateral relocation attachment. Lateral relocation of pads 70, 72, 74 and 76 permits pad locations suitable for cradling various sized laptop computers. Pads 70, 72, 74 and 76 height above tray 12

may be adjusted by spacer 100 to promote cradling of the laptop computer and to secure the laptop computer between pads 70, 72, 74 and 76 and lid 14 when case 10 is in position 38. Spacer 100 may include any suitable means of changing height of pads 70, 72, 74 and 76 above tray 12 including but not limited to pads 70, 72, 74 and 76 of varying heights or extendable pads 70, 72, 74 and 76. Pads 70, 72, 74 and 76 may be fabricated from rubber, plastic or other suitable material.

[0016] Liner pad 50, lining lid 14, provides frictional engagement, insulation and cushioning. In position 38, liner pad 50 may frictionally engage laptop computer 118 to secure and cushion the laptop computer between liner 50 and pads 70, 72, 74 and 76 within closed case 10. In position 116, liner 50 provides cushioning between the user and lid 14 and frictionally engages the lap of the user to increase stability and reduce slippage of case 10. Liner 50 may reduce heat transferred from case 10 to the user while in position 116 and resting in the lap of the user. Liner 50 may be fabricated from open cell foam, closed celled foam or any suitable material. Liner 50 may be attached to lid 14 by any suitable means. As shown in Fig. 3, liner 50 may extend beyond the envelope of lid 14 to minimize the likelihood of contact between a user lap and lid 14 when case 10 is in open position 116.

[0017] Tray 12 may also include material 80 secured to surface 132. Material 80 may conduct heat radiated from laptop computer 118. The heat conducted into material 80 may be dissipated in spaces 94 and 82. Material 80 may be fabricated from any suitable material. Material 80 may be attached to tray 12 by any suitable means.

[0018] A laptop computer is located in case 10 so that the computer is secured against lateral movement relative to tray 12 by engagement stops 40, 41 42 and 44. Engagement stops 40, 41, 42 and 44 may removably and adjustably engage the laptop computer using engagement elements 40', 41', 42' and 44' respectively. Engagement elements 40', 41', 42' and 44' engage any suitable engagement location such as engagement locations 40", 41", 42", and 44" respectively of tray 12. Engagement elements 40', 41', 42' and 44' permit lateral relocation, relative to tray 12, of engagement stops 40, 41 42 and 44 respectively. Engagement elements 40', 41', 42' and 44' may also permit vertical adjustment, relative to tray 12, of engagement stops 40, 41 42 and 44 respectively. Engagement elements 40', 41', 42' and 44' may include but are not limited to adhesive attachment or slotted attachment or hook and loop attachment or any suitable means lateral relocation attachment. Case 10 may be adapted to engage laptop computers of various sizes by lateral relocation of engagement stops 40, 41, 42 and 44.

[0019] Support 56 is formed by side 30 and is attached by hinge 138 or other suitable means to tray 12. Support 56 may provide support to the wrists of a user operating a cradled laptop computer when support 56 is opened and case 10 is in position 116. Support 56 may be fabricated from plastic, titanium, carbon fiber composite or any suitable material.

[0020] Computer connector access 24' may be provided through side 24. Access 24' may be a rectangular window as shown in Fig. 1B or it may be a complete removal of a portion of side 24 as shown in Fig. 4. Access 24' may adopt any suitable shape and may be located in any appropriate portion of side

24. If access 24' is incorporated as a window as shown in Fig. 1B, more than one access 24' may be incorporated as necessary. Care must be exercised not to remove too much of side 24 by providing access 24' that the structural integrity of case 10 is endangered.

[0021] A computer access door such as door 78 may be attached by hinge 86 or other suitable means to first side 26 or second side 28 or both first side 26 and second side 28 of tray 12 or other suitable locations on case 10. Door 78 is located and sized to allow access to a laptop computer's side mounted accessories, including but not limited to CD or floppy disk drives, without removing the laptop computer from case 10. To close door 78, door 78 may be pivoted until door 78 is substantially flush with the side to which it is attached.

[0022] Referring now to Fig. 2, laptop computer 118 may be cradled on tray 12 by pads 70, 72, 74 and 76 with first corner 124 and second corner 126 of laptop computer 118 engaged by engagement stops 44 and 42, respectively. First rear corner 122 and second rear corner 122' of laptop computer 118 are engaged by engagement stops 40 and 41 respectively.

[0023] Support 56 may include pad 110. Pad 110 provides cushioning between the user and support 56. Pad 110 may be fabricated from any suitable material. Support 56 provides wrist support for the user when pivoted outward from tray 12 about hinge 138 until opened to position 68. When closed, pad 110 provides cushioning between laptop computer 118 and support 56. Door 78 can pivot outward from tray 12 on hinge 86 to position 88 to gain access to laptop computer 118 side mounted accessories without removing laptop computer 118 from case 10.

[0024] Referring now to Fig. 3, pads 70, 72, 74 and 76 may be located in any suitable location relative to tray 12 and laptop computer 118 to engage support 102. Support 102 may be feet or legs of laptop computer 118 or other laptop computer 118 support structure. Pads 70, 72, 74 and 76 may be located under support 102 to promote proper load transfer into laptop computer 118. Improper load transfer may damage laptop computer 118. Space 82 is formed when pads 70, 72, 74 and 76 are placed between support 102 and tray 12. Space 82 provides air access between laptop computer 118 and tray 12 to aid heat dissipation from laptop computer 118. Varying the size of pads 70, 72, 74 and 76 will vary the amount of air access in space 82.

[0025] Referring now to Fig. 4, in a currently preferred embodiment of the present disclosure, handle 16 may be retractably attached to lid 14. Handle 16 may adjust to varying lengths to accommodate a grip or a shoulder strap. Handle 16 may exit lid 14 through slots 18 and 20. Slots 18 and 20 may be located in any suitable location in lid 14. Handle 16 may be a fabric strap or a plastic strap or a combination of beaded steel cable with a padded strap or other suitable materials or combinations of materials.

[0026] Screens 90 and 96 may provide glare reduction during operation of laptop computer 118 and a privacy shield to prevent viewing of laptop computer 118 by those near the user. Screens 90 and 96 may be removably attached to tray 12 so that a user may gain access to accessories mounted on the sides of laptop 118 by removing screens 90 and 96 from tray 12. Screens 90 and 96 may be located in any suitable location. Strap 106 may removably engage laptop 118 so that when laptop computer

118 is open, strap 106 may be draped over the open laptop computer 118 to hold up screens 90 and 96. During extension, screens 90 and 96 pivot about line 108 until screens 90 and 96 are extended. Screens 90 and 96 may have a fan shape or other suitable shape when extended. Screens 90 and 96 may be retracted against tray 12 and fit inside case 10 when in position 38. Screens 90 and 96 may be opaque. Screens 90 and 96 and strap 106 may be fabricated from fabric or any suitable material.

[0027] Light 128 may be attached to screen 90 or screen 96 or laptop computer 118 or tray 12 or lid 14 or any location suitable by any suitable means to provide illumination of laptop computer 118. Illumination from light 128 may be provided by incandescent bulb or bulbs or light emitting diode or diodes or other suitable illumination source. Illumination power may be provided by a discrete battery or a connection to the cradled laptop computer power supply or other suitable power source.

[0028] Pad 64 may be removably attached or hingeably attached or slideably attached or attached by other suitable means. Pad 64 may slideably extend or pivot out of slot 104. Slot 104 may be located on first side 26 or second side 28 or other suitable locations on tray 12 or lid 14. Pad 64 may be sized to provide support during operation of a computer mouse. Pad 64 may be fabricated from plastic, titanium, carbon fiber composite or any suitable material.

[0029] Referring now to Fig. 5, handle 16 may be retractably attached in any suitable location in lid 14. Handle 16 may be attached to lid 14 at attachment 114 and spooled around pulley 66. Biasing means 112 may apply retraction force 98 to pulley

66 which then transmits this force to handle 16 to promote handle 16 retraction into case 10. Biasing means 112 may be provided by spring or elastic material or other suitable means. Attach point 114 and pulley 66 may be located in any suitable location in lid 14.

[0030] Referring now to Fig. 6, in another currently preferred embodiment of the present disclosure, case 10 may include lock 92. Lock 92 may be attached to case 10 at any suitable location. Handle 16 may include end 58. End 58 may be removable from attach point 114 and withdrawn from lid 14. Handle 16 may be wrapped around object 134 and removably engaged by lock 92 to lock case 10 to object 134 when case 10 is in closed position 38. Lock 92 may lock lid 14 to tray 12.

[0031] Having now described the invention in accordance with the requirements of the patent statutes, those skilled in this art will understand how to make changes and modifications in the present invention to meet their specific requirements or conditions. Such changes and modifications may be made without departing from the scope and spirit of the invention as set forth in the following claims and their legal equivalents.